The Golden Arches Theory of Public Health

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Abstract

The Golden Arches Theory of Public Health states that countries with McDonalds have better health. It combines public health research with political science theory to view the effects of globalization as represented by the presence of McDonald's. Specifically, it looks at the connection between the direct health indicators of life expectancy, infant mortality, and global nutrition index, with the indirect indicators of economic, political, and health system status. The country comparison results show that as proven by multiple determinants and simple logic syllogism, countries with McDonald's do have better health. The implications do not mean public health practitioners should advocate bringing McDonald's to impoverished countries to improve their health. Rather, this theory validates the necessity that public health programs tie into a larger network including economic, social, and political factors.

Do countries with McDonald's have better health? At first glance, this question seems absurd. But delving deeper into the connection between indirect indicators of health, as represented by the presence of McDonald's, with several direct indicators of health, show that health status is influenced by a broad range of determinants. This paper examines one aspect of globalization effects on health through a Golden Arch shaped lens.

The spread of McDonald's can be associated with globalization, which carries the increase of inexpensive, processed, nutritionally poor food. McDonald's is a fast food chain known for food with high sodium, high saturated fat, and low nutritional value. People who regularly eat at McDonald's are generally assumed to have poor health. Developed countries with fast food chains face chronic diseases stemming from obesity more than developing countries maintaining traditional dietary customs.

On the other hand, globalization can also bring the benefits of developed countries to less developed nations. These include civil stability, economic prosperity, and functioning healthcare systems. While developed countries have more chronic disease cases, they also have the means to advance research for cures and the medical facilities to provide treatment. McDonald's are typically found in globalized or developed countries, so these countries have more opportunities for better health.

A well-known political science theory claims that countries with McDonald's will not fight a war against each other. Public health research links societal function with health status of a country. The Golden Arches Theory of Public Health ties these two premises together through simple logic syllogism and results in the theory that countries with McDonald's have

better health. While the theory works logically, it does not sound right realistically. This paper will examine the evidence in order to determine the validity of the Golden Arches Theory of Public Health.

I. Premise 1: Golden Arches Theory of Conflict Prevention

Thomas Friedman's Golden Arches Theory of Conflict Prevention claims that no two countries that both have McDonald's have fought a war against each other since each opened a McDonald's (Friedman, 2001, p. 239). The foundation for this is that once a country has reached the level of economic development where it has a middle class big enough to support the fast food network, it becomes a McDonald's country (Friedman, 2001, p. 240). Countries with McDonald's are politically and economically stable, with productive populations. Simply put, people would rather eat burgers than fight wars. While there are likely several exceptions, this idea has held up and remained true in the ten years since it was published.

Globalization does not end geopolitics, but increases the incentives for not going to war while increasing the costs of going to war. The Golden Arches Theory of Conflict Prevention highlights one way globalization affects geopolitics and raises those costs; through economic integration (Friedman, 2001, p. 251). This necessity was written about as early as 1748 by Baron de Montesquieu, "two nations who traffic with each other become reciprocally dependent; for if one has an interest in buying, the other has an interest in selling; and thus their union is founded on their mutual necessities" (Bok, 2010). Politically and economically powerful countries also have a national interest in global health, which in turn has international economic, political, security, and ethical implications (Gostin, 2007, p. 92). These factors work

in a delicate balance to maintain civil societies, and broaden interest and involvement outside of a nation's borders.

Historically, wars were mostly fought between wealthy and powerful nations attempting to colonize and expand their kingdoms. Cold war era politics consisted of the United States and the Soviet Union fighting to dominate and outplay each other. They often did this by giving aid to developing countries to gain their favor as an additional ally. In contrast, globalization era politics are geared towards dominating the technological and electronic environment, controlling the power through investments and building plant locations (Friedman, 2001, p. 245). The trend has changed so most conflicts are now between the weakest and poorest states (Benatar, 2003, p. 122). Changes in conflicts also include the rise of terrorism, generally initiated in unstable nations, who in turn target powerful nations. This trend has shifted the balance of where aid, including public health aid, and resources are sent to.

Post cold war politics and globalization emphasize human rights, shifting the focus from states to individuals, limiting state sovereignty with increasing Non-Governmental Organizations (NGOs), corporations, and public-private partnerships (Gostin, 2008, p. 61). Unstable countries have less access to NGOs, and those NGOs that do come to the aid of developing countries often have less influence on government decisions (Levy, 2006, p. 385). Corruption is high while concern for the population is low in unstable regimes. While global politics dictate that aid is sent to unstable nations in an attempt to gain stability, the resources are not necessarily implemented effectively.

Technology makes communication instant and accessible. In the age of globalization, people increasingly know how others live, so will become less likely to make sacrifices for the government (Friedman, 2001, p. 240). People become less tolerant when governments do things to make economic integration and a better lifestyle, such as symbolized by McDonald's, less possible. This is even more true in areas outside of frivolous fast food chains. A recent example is the Arab Spring political uprisings. Protests that started in Tunisia quickly spread to Egypt, Libya, and multiple other Middle Eastern countries, with information influencing others through various social media outlets. In more developed nations, individual rights are often emphasized to a larger degree, and people are quick to react when threatened by government influences. Recent healthcare debates and changes in the United States led to raised emotions and increased political participation by the population. People have differing ideas about what the best healthcare system for the country is, and less tolerance for a government that does not share the same beliefs.

II. Premise 2: Correlation between civil society and health

There is a positive correlation between good health and the effective functioning of government and civil society. Countries with extremely unhealthy populations are often fragmented, poorly governed, or in crisis (Gostin, 2007, p. 90). Sub-Saharan Africa has the highest concentration of diseases of poverty in the world, and also contains many regions of social or political instability. The same is true for South America, where infectious diseases such as malaria are prevalent, alongside poverty and political unrest. A functional civil society is necessary for a functional public health infrastructure, which in turn, is necessary for disease

prevention, outbreak control, and health promotion (Jacob, 2009, p. 9). Unstable governments focus on maintaining power, rather than maintaining the health of their population.

State stability and human rights are often concurrent. The protection of human rights is extremely limited in developing countries, leading to large scale abuses such as genocide, ethnic cleansing, and forced migration; as well as systematic problems such as lack of access to safe food, water, health, and security (Levy, 2006, p. 385). Unstable countries often have wide gaps between the few who are very rich and the many who are very poor, causing markedly increased rates of illness and premature death due to social injustices (Levy, 2006, p. 379). Developing countries are affected greater by fluctuations in living standards, because a larger segment of their population is already poor and vulnerable (Hopkins, 2006, p. 347). Poor health is often the result of poor nutrition, limited access to therapeutic and preventive health services, and increased exposure to health and safety hazards (Levy, 2006, p. 380). As the stability of a county decreases, human rights violations and disparities within the population increase, and vice versa. During times of conflict those already at a disadvantage often have their rights violated first.

A 2000 Central Intelligence Agency (CIA) report showed that high infant mortality was a leading predictor of state failure (Goldstone, 2000). Infant mortality was measured because it is a widely and consistently reported variable, and provides an indicator for broader changes in economic development and material well-being. It is also sensitive to the quality of a country's medical and public health systems, levels of maternal and infant nutrition, access to shelter, clean drinking water, and levels of education and literacy (Goldstone, 2000, p. 34). Health, as

demonstrated by infant mortality rates, is a non-conventional threat to political stability (Goldstone, 2000, p. 72). Countries with high infant mortality rates are more likely to be unstable, while stable countries have lower infant mortality rates.

Political factors are not always linked directly to individual health, but may be related to the quality of the healthcare system, which in turn, affects the health of the individual (Klomp, 2009, p. 36). Of existing political systems, democracies have the most positive relationship with individual health. Democracies tend to spend more on health systems because of the electoral process; voters want healthcare and will not tolerate corrupt or poorly managed systems (Klomp, 2009, p. 40). Regime instability has a negative relationship with health of individuals because of the lowered quality of the healthcare sector, lack of funding, and disruptions to services (Klomp, 2009, p. 40).

Economic decline of a country has a reciprocal effect on health of both individual and community health. An economic crisis of declining economic growth rates, lower Gross Domestic Product (GDP), higher inflation leading to higher food prices, and increased unemployment and bankruptcies all lead to a decline in household income. A lower household income affects the quantity and quality of food purchased, leaves less money for health care and education, and reduction or loss of health insurance, all of which increase the cases of malnutrition and low birth weight babies while neglecting treatment of other medical concerns. An economic crisis also reduces tax revenues, diminishing government spending for health and education, reducing services such as immunizations. The final result of economic crisis on both

individuals and communities is lowered health status through higher mortality rates and lower life expectancy (Hopkins, 2006, p. 349).

Overall GDP is not a singular universal indicator of health. This is evidenced by countries such as Costa Rica and Cuba, both of which have low GDPs and high life expectancies, and the wealthiest country in the world, the United States, which has lower health indicators compared to other developed countries (Subramanian, 2002, p. 288). The macroeconomic determinants of health look at both absolute and relative poverty. Poverty is correlated with poor health outcomes in developing countries because of absolute poverty, and in developed countries because of relative poverty (Subramanian, 2002, p. 299). Disparity between higher and lower socioeconomic groups may be a stronger determinant of poor health than the overall level of poverty. For example, a poor person in New York City is likely to have worse health status than a middle class person in Bangladesh because of their social and psychological status relative to the society they live in (Siegel, 2007, p. 8). Gaps in life expectancy are greatly increased between socioeconomic groups, highlighting inequalities. The difference is shown in both overall length of life and portion of life spent disabled by poor health (Robine, 1991, p. 458).

The link between health and societal stability is not a one-way relationship. Poor health can contribute to instability, civil unrest, mass migrations, and human rights abuses. Lack of a public sector healthcare creates high demand for private sector healthcare, causing people to pay out of pocket with personal funds, furthering poverty and inequalities (Jacob, 2009, p. 9). Countries facing health disasters may be prone to political upheaval. In turn, these vulnerable populations provide greater opportunity to recruit disaffected people to join armed conflicts or

harbor terrorists (Gostin, 2007, p. 90). Even the political climate of traditionally stable, developed countries may react to health crises. In the aftermath of Hurricane Katrina in 2005, President Bush's approval rating plummeted, and his handling of the health crises was considered one of his biggest failures in office. Countries with disease epidemics also face economic trials, through both their internal prevention and treatment costs, and externally through restricted tourism, trade, and commerce (Gostin, 2007, p. 90). Examples include the ban on British beef over fear of mad cow disease in 1996, and the 2003 severe acute respiratory syndrome (SARS) outbreaks. Ensuing health problems of a country can lead to economic decline not just through healthcare costs, but through reduced workforce. Sub-Saharan Africa accounts for 72% of AIDS deaths worldwide, lowering average life expectancy to 47 years, leaving countries short of a skilled workforce (Gostin, 2007, p. 90). Improved health status can lead to higher overall income through labor productivity and worker longevity (Hopkins, 2006, p. 348). Life expectancy may also be thought of as potential return on investment in human capital (CIA, 2011, life expectancy at birth). If viewed in a positive manner, this idea should prompt governments and aid organizations to improve health conditions of their populations so they will get results in return. If viewed negatively, then investments of resources will only go to countries with already healthy populations, while countries with poor health will be seen as low collateral.

III. Logic syllogism

A syllogism in logic is a deductive argument with two premises and a conclusion. In a categorical syllogism, both premises and the conclusion are simple declarative statements

constructed using three simple concepts between them (Encyclopedia Britannica, 2011). Aristotle developed this theory of inference, where each premise statement has exactly one term in common, and the conclusion is a categorical sentence of the two terms not shared in the premise (Smith, 2011).

According to syllogism logic, the following theorem is true:

If A = B, and B = C, then A = C

A= presence of McDonald's

B= stable society

C= good health

Premise 1: the Golden Arches Theory of Conflict Prevention says that countries with McDonald's will not go to war against each other (A=B)

Premise 2: there is a correlation between the effective functioning of government and civil society with good health (B=C)

Conclusion: countries with McDonald's have better health (A=C)

The contra-positive of a conditional statement is formed by negating the premises and conclusion, and then interchanging the resulting negations (Alpha Score, 2011).

If not B, then not A

If not C, then not B

If not C, then not A

Low trade openness and high infant mortality rates were identified in a report by the Central Intelligence Agency as the best predictors of state failures in a study examining data between 1955 to 1994 (Esty, 1995, p. 26). Trade openness, the value of imports and exports divided by the Gross Domestic Product, correlates only with road density and population of a country (Esty, 1995, p. 26). The presence of the international fast food chain McDonald's might be included under the umbrella of trade openness, furthering the theory of Golden Arches and country stability. Infant mortality is highly correlated with economic, political, societal, and environmental indicators measuring quality of life (Esty, 1995, p. 27). Infant mortality is sometimes used as a health indicator for a country. This shows how the contra-positive of the theory could be rewritten as:

A= presence of McDonald's (trade openness)
B= stable society (no state failure)
C= good health (low infant mortality)

Contra-positive Premise 1: unstable societies lack McDonald's (if not B then not A)

Contra-positive Premise 2: poor health of a country means an unstable society (if not C then not B)

Contra-positive conclusion: countries with poor health do not have McDonald's (if not C then not A)

IV. Rebuttal

Globalization is a process characterized by changes in a range of social spheres including economics, politics, technology, culture, and environment (Gostin, 2008, p. 53). Although global expansion of the technological, economic, social, cultural, and political forces benefit some members of society, it also harms or threatens to harm a large portion of the world, particularly the already poor and disadvantaged sectors (Harris, 2004, p. 1). Developing countries or low-socioeconomic groups are persuaded by cultural perceptions and want to emulate industrialized nations or wealthy classes. McDonald's, started in the wealthy United States, is a sign of affluence and is an elite status symbol to poor countries. Community health systems have changed, and there are increased disparities because poor countries are forced to privatize and use improper fee structures for health services (Gostin, 2008, p. 54). International drug and vaccine safety regulations are limited, unethical medical and drug trial recruitments are ethically questionable, and health workers are migrating to higher paying jobs and moving to urban areas, leaving areas of need and rural communities without qualified providers (Ooms, 2008, p. 156). The spread of infectious diseases has increased with trade and migration. The expanding problems in developing countries lead to a double burden, because while globalization increases the incidence of chronic disease, they still face infectious diseases. Nutritionally, globalization causes the poor to be over-fed with under-nutrition through the consumption of inexpensive food of low nutritional value (Harris, 2004, p. 17).

Multinational corporations, such as McDonald's, have increasingly significant influence and power over global consumption, and are not strictly governed by international health laws (Gostin, 208, p. 54). Urban consumer preferences are shaped by globally promoted images, and diseases of dietary excess are escalating as food production and processing have increased,

leading to a widespread rise of urban obesity (Harris, 2004, p. 4). Non-communicable diseases are now the major cause of death and disability in both developed and developing countries (Gostin, 2008, p. 53). The economics of low incomes from increased urbanization do not permit the purchase of nutritious foods, compounded with the marketing from large corporations like McDonald's, leads to consumption of cheap processed foods and diets high in fat, salt, and sugar (Harris, 2004, p. 16).

As globalization spreads, changes in health and the health system are evident through industrialization, urbanization, economic development, and food-market globalization (Gostin, 2008, p. 54). Human behavior changes include increasingly high fat diets, sedentary lifestyles, smoking, and drinking. There is increased reliance on imported rather than traditional foods. Effects of the imported food trade include possible contamination from food-borne diseases or pesticides, and an increase in child labor to meet the market demand. Increased competition of food markets leaves consumers seeking the best bundle of product they can buy, balancing cost, quality, and other factors (Roe, 2008, p. 494). The convenience of a low-cost fast food chain like McDonald's may have more value than nutritional content to many consumers.

Looking at the individual indicators of political stability, economic prosperity, and healthcare systems, economically adverse conditions may actually improve health. Declining income and unemployment restrict access to vices such as tobacco and alcohol, as well as lowering job related stress, occupational accidents, and car accidents (Hopkins, 2006, p. 356). Four of the top ten leading global risk factors may be lowered with unemployment: high blood pressure, tobacco consumption, alcohol consumption, indoor smoke from solid fuels (WHO,

2002, p. 7). Other occupational risks that can affect health include carcinogens, airborne particulates and chemicals, and adverse ergonomic conditions. Job related stress is associated with cardiovascular disease, and traffic and transport not only raise the risk of individual injury, but also have the environmental consequence of polluting air quality (WHO, 2002, p. 73).

V. Findings

McDonald's is one of the most well known fast food restaurants and top franchising companies in the world. The first McDonald's opened in 1955, and there are now more than 32,000 restaurants in 117 countries (McDonald's, 2010). The corporate headquarters runs a research and development lab at their Hamburger University, while teaching operators at different levels the keys to fast food success. While a goal of McDonald's is to provide consistent products at all locations, the corporation also caters to individual franchise preferences. For example, when the first McDonald's opened in India in 1996, they had to completely change the traditional menu to not include beef or pork products. They developed vegetarian meals using locally sourced ingredients, built brand awareness within the community, and taught new customers the process of self-service food (Thorn, 2011). While some argue bringing McDonald's to countries such as India advances commercialization and destroys traditional values of that society, others contend it helps the country economically, and improves individual lives through job skills and education. The following section will compare the presence of McDonald's to life expectancy, infant mortality rates, and global nutritional index, all direct indicators of health, and the economic, political, and health system status of countries, all indirect indicators of health.

The CIA summarizes life expectancy at birth, the average number of years to be lived by people born in the same year, as a measure of overall quality of life in a country (CIA, 2011, life expectancy at birth). Life expectancy can be used as an index for both the physical and mental health of a population, allocation of resources, and measuring success of political programs, which can be a combination of political stability and healthcare systems (Robine, 1991, p. 457). The CIA country comparison lists 222 countries in the world. The McDonald's website states they have franchises in 117 countries, but only lists 62 specifically. A compilation from Wikipedia names 103 countries that have McDonald's (Wikipedia, 2011).

Dividing the 222 countries in half shows the following:

Life Expectancy Rank	Life Expectancy Range (in years)	Presence of McDonald's	Percentage with McDonald's
1-110 (longer life)	89.73-73.93	78 countries	71%
111-222 (shorter life)	73.92-38.76	25 countries	23%

Results indicate less than a 16 year span in life expectancy in countries in the top half, but over a 35 year span in life expectancy in countries in the lower half; the presence of McDonald's in the top half is triple that of the countries in the lower half. McDonald's is present in the top five countries, and not present in the bottom five.

Infant mortality rate, the number of deaths of infants under one year old in a given year per 1,000 live births in the same year, is another indicator used to measure the level of health

in a country (CIA, 2011, Infant Mortality). The following chart compares the infant mortality rates of countries compared to the presence of McDonald's.

Infant Mortality Rank	Deaths/1,000 Live Births	Presence of McDonald's	Percentage with McDonald's
1-110 (more deaths)	175.9 – 16.38	25 countries	23%
111-222 (fewer deaths)	16.16 – 1.79	79 countries	72%

The most significant piece of evidence from this comparison is that out of the top 50 countries with the highest infant mortality ranks, only one (Pakistan) has a McDonald's. Adding India and South Africa comprises the only three countries in the top 71 to have McDonald's. The vast majority of countries with the 50 lowest infant mortality rates without McDonald's are island nations, whose size might not warrant the support for commercial fast food chains.

The Global Nutrition Index (GNI) was developed using three indicators of nutritional status: deficits, measured by malnutrition and micronutrient deficiency; excess, measured by obesity; and food security, measured by the percentage of the population undernourished and the level of inequality in access to food within a country (Rosenbloom, 2008, p. 266). An interesting aspect of this indicator is that it does not automatically rank the poorest nations as last, but takes into account diseases of affluence (obesity) as well, giving a better spectrum of nutritional health. For study purposes, countries were divided into four groups: developed, in transition, low-mortality developing, and high-mortality developing. Results showed that the correlation between good nutrition and development are not always synonymous. For

example, developed countries such as Canada, New Zealand, and the US had low GNIs of 35, 55, and 99. The United States had low scores for food security, low-moderate scores for deficiency, and a very high score for obesity. Multiple countries listed as developing had high GNIs, such as Korea at 12, China at 17, and Malaysia at 25. Several countries also demonstrated the double burden, or over-fed malnourished scenario. Mauritania, South Africa, Samoa, Lesotho, and Fiji all showed both nutrient deficits and excesses.

Dividing the 192 countries ranked shows the following:

GNI Rank	GNI Score	Presence of McDonald's	Percentage with McDonald's
1-95 (good nutrition)	0.989 – 0.812	72 countries	75%
96-192 (poor nutrition)	0.811 – 0.420	21 countries	22%

The top 27 countries all have McDonald's; only three of the top 50 countries do not have a McDonald's. No country in the bottom 22 has a McDonald's; this is mostly a mix of African countries and Island nations. Of all the non-developed grouped countries in the top 50, of which there are 23, only one does not have a McDonald's. These results indicate that McDonald's is not necessarily linked to poor health, as suggested by globalization theories. A rank of countries by obesity levels blamed the influx of Western lifestyles consisting of fast food, little exercise, and stressful jobs as the cause of making people fat (Streib, 2007). However, eight of the top ten most obese nations were Pacific Island nations, only one of which has a McDonald's.

The numbers correlating presence of McDonald's with life expectancy at birth and infant mortality rates are almost identical (24/25 and 78/79). While the countries with the worst ratings are primarily the same, mostly African nations with the exception of Afghanistan, the order differs. For example, Swaziland has the 5th lowest life expectancy rate and the 26th worst infant mortality rate. Gabon ranks 16th for lowest life expectancy, and only 48th for infant mortality rate. The differences could be due to actual health differences, or they could be faulty reporting procedures. Overlooking the minor order changes, the similarity in percentages between countries with McDonald's and life expectancy and infant mortality rates are striking. This could possibly suggest a link that the fast food chain does not affect quality of health, as the percentages are so close at birth (before they consume McDonald's), and at end of full life (when they could have consumed McDonald's for years). The fact that the corresponding percentage of McDonald's to GNI is slightly higher than the corresponding percentages of McDonald's to life expectancy and infant mortality is unexpected. Initial assumptions would be that McDonald's has a negative impact on health, particularly in the aspect of nutrition. While McDonald's likely contributes to obesity, one component of the GNI, it also may help other components by expanding access to and affordability of food.

The political and economic stability of a country factor in to the health of that country, and can act as indirect predictors of health. The Political Instability Task Force created a model with over 80% predictive success rate to measure the threat posted to governments by social unrest. It is based off of four factors; level of development measured by infant mortality rate, extreme cases of discrimination against minorities, regime type, and intense factionalism in domestic politics. The overall political instability index of a country is the average of two

component indexes: underlying vulnerability and economic distress. Underlying vulnerability is measured by inequality, state history, corruption, ethnic fragmentation, trust in institutions, status of minorities, history of political instability, proclivity to labor unrest, level of social provision, country neighborhood, regime type, and regime factionalism. Economic distress is measured by growth in incomes, unemployment, and level of income per head (Economist, 2010).

Comparing the 165 countries ranked with the political instability index and the presence of McDonald's shows the following:

Threat of Social Unrest	Index Score Range (scale of 1-10)	Presence of McDonald's	Percentage with McDonald's
1-82 (most vulnerable)	8.8-6.1	34 countries	41%
83-165 (most stable)	6.1-1.2	53 countries	65%

Results indicate that the presence of McDonald's is 1.5 times more likely in stable countries than in unstable countries. Only two of the top 15 most unstable countries, eight of which are *not* from Africa, have McDonald's. This is significant because in most of the other country rankings, African nations hold the majority of the bottom spots. Only one country out of the 25 most politically stable countries does not have a McDonald's.

Gross Domestic Product (GDP) can be an indicator for health as countries with more purchasing power have more money to spend on health care infrastructure, and individuals are likely to have more money available to spend on health services. Numerous studies show the

connection between economic prosperity and health on both national and individual levels. A ranking of 228 countries by GDP per capita shows the following (CIA, 2004, GDP Per Capita):

GDP Rank	GDP Per Capita	Presence of McDonald's	Percentage with McDonald's
1-114 (richest)	$145,300 - $9,400	84 countries	74%
115-228 (poorest)	$9,200-$300	26 countries	23%

74% of the richest countries in the world have McDonald's, while only 23% of the poorest countries have McDonald's. There are no McDonald's present in the poorest 47 nations of the world, while 41 of the richest 50 nations have the fast food franchise.

Combining the direct and indirect health indicators with percentage of countries that have McDonald's gives the following:

Indicator	Top Half	Bottom Half
Life Expectancy	71%	23%
Infant Mortality	72%	23%
Global Nutrition Index	75%	22%
Political Stability	65%	41%
Gross Domestic Product	74%	23%

The evidence is clear. The presence of McDonald's in a country gives some indication of the health status of that country. Countries with McDonald's have roughly a 70% chance of ranking in the top half for health determinants, while countries without McDonald's have roughly a 75% chance of ranking in the bottom half for health determinants. The lowest correlation is political stability, which could mean that even rebels and dictators enjoy eating at the fast food chain!

There are clearly outliers from the general trends in this information. Most of the countries ranked in the bottom half are African nations. Out of the bottom 48 countries ranked in life expectancy, South Africa is the only one with McDonald's. Out of the bottom 71 countries ranked in infant mortality, South Africa is one of three, along with India and Pakistan, to have McDonald's.

Indicator	**SA Rank**
Life Expectancy	216
Infant Mortality	165
Global Nutrition Index	57
Political Stability	39
Gross Domestic Product	105

South Africa is the wealthiest country in Africa. They are the world's largest producer of mined platinum, gold, and chromium. However, they are ranked 174th in the world for unemployment, with 24% of their population out of work (CIA, 2011, South Africa). This shows that broad economics alone are not a true indicator of health; how the economics are distributed must be taken into account. With a long history of apartheid and segregation, South Africa is still a country of wide disparity and inequality. The scores from the GNI also show conflicting resource distribution within South Africa, as they face the double burden of high deficiency rates concurrent with high obesity. This could be either structural inequality, allowing people to become overfed while still undernourished, or individual inequality of part of the population lives in excess while the other half lives in hunger.

The United States is another perplexing nation. United States ranks for the given indicators are:

Indicator	**US Rank**
Life Expectancy	50
Infant Mortality	176
Global Nutrition Index	99
Political Stability	55
Gross Domestic Product	10

The most obvious issue is that the United States has the money for good health, but is not spending it correctly. Studies show that Americans spend twice as much as residents of other developed nations on health care, but get lower quality, less efficiency, and have a less equitable system with many uninsured (Fox, 2010). Americans spend a higher percentage of their GDP on healthcare but have fewer results. One explanation is the United States healthcare system is inefficient, wasting money through insurance premiums and lacking coverage for all Americans. The World Health Organization (WHO) ranked the world's health systems in 2009, and the United States ranked 37th (WHO, 2000). They cited the main failings of many health systems to be inadequate balance between the public and private sectors, and failure of governments to implement and enforce regulations, leading to illegal practices (WHO, 2000). Others argue it is the sedentary lifestyle and prevalence of fast food that lead to rising obesity rates and chronic diseases. Refuting the Golden Arches Theory of Public Health, one could look at not only the presence of McDonald's, but the number of McDonald's in a country to indicate health. The United States dominates the McDonald's market, with over 13,380 franchises throughout the country (Wikipedia, 2011). This indicates the availability of fast food chains is linked to obesity, as the United States ranks high in the obesity component in the GNI.

However, the country with the next highest amount of McDonald's is Japan, with over 3,600 franchises, which consistently ranks at the top for all indicators.

Indicator	**Japan Rank**
Life Expectancy	5

Infant Mortality	218
Global Nutrition Index	1
Political Stability	15
Gross Domestic Product	38

While still high, compared to their other indicators, Japan's lowest rank is their GDP. This is a direct contrast to the rankings of the US. This indicates that how the money is spent, or the function of the health system, plays a critical role in health of a country. The objective of good health for a country is the best attainable average level and the smallest feasible difference among individuals and groups (WHO, 2000, xi). The WHO found that health was most equally distributed in Japan (WHO, 2000, p. 46). The world's health systems were ranked based off measures of goal attainment and performance, to include disability adjusted life expectancy, health equality in terms of child survival, responsiveness level, responsiveness distribution, fairness of financial contribution, performance on level of health, and overall health system performance (WHO, 2000, p. 144). The following table shows the correlation between health systems and presence of McDonald's (WHO, 2000, p. 152).

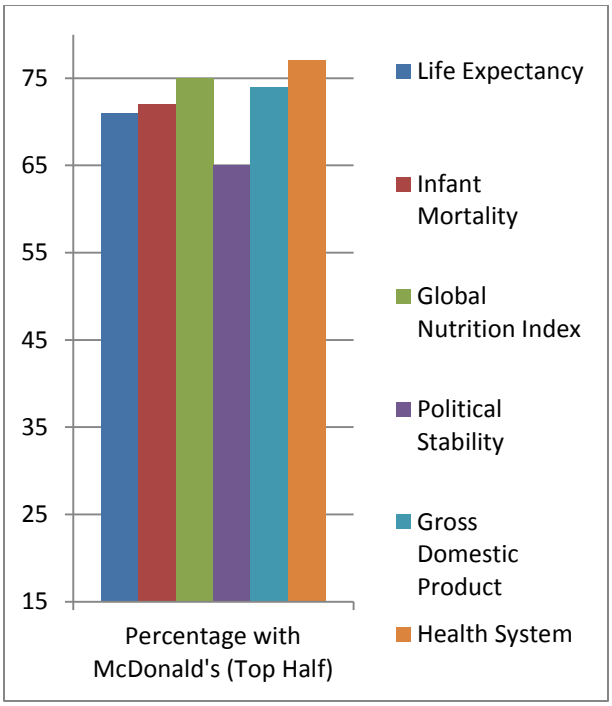
Health System Rank	Presence of McDonald's	Percentage with McDonald's
1-95	73 countries	77%
96-190	18 countries	19%

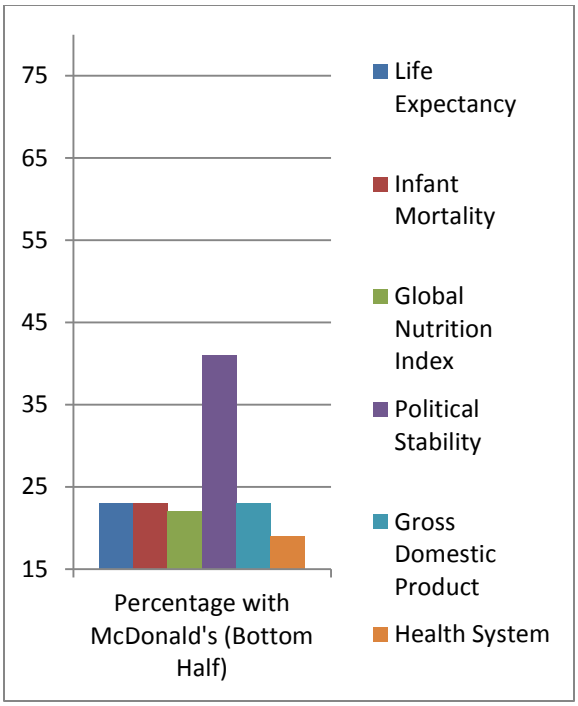
Of the countries ranked in the top 50 for the world's health systems, only one does not have a McDonald's. Of the bottom 58, only two have McDonald's. The WHO suggests a health system includes all the activities whose primary purpose is to promote, restore, or maintain good health, with four vital functions: service provision, resource generation, financing, and stewardship (WHO, 2000, xi).

Combining the health system rank with the previous indicators shows health system rank and presence of McDonald's has the highest correlation:

Indicator	Top Half	Bottom Half
Life Expectancy	71%	23%
Infant Mortality	72%	23%
Global Nutrition Index	75%	22%
Political Stability	65%	41%
Gross Domestic Product	74%	23%
Health System	77%	19%

A visual comparison of the countries ranked in the top half (1-110) for health indicators against the countries ranked in the bottom half (111-222) with presence of McDonald's is striking.





It is interesting to note that political stability, from which this theorem originated (Premise 1, Golden Arches Theory of Conflict Resolution), has the least impact as seen by both the top and bottom halves. Conversely, health system is shown by both halves to have the greatest impact.

In addition to having the highest correlation between health system and McDonald's, there are individual country examples that show health system may have a bigger impact on health than the other indirect indicators of political stability and economics. The United States is frequently used as an example of a country that has the civil stability and economic means, but does not have a fully effective healthcare system.

Country	**Health System Rank**	**GDP Rank**
Qatar	44	1

Kuwait	45	8
Brunei	40	9
Colombia	22	112
Thailand	47	118
Dominican Republic	51	119
Morocco	29	146

Qatar, Kuwait, and Brunei, three of the top ten wealthiest nations in the world, do not even make the top 40 in the world's health systems. Colombia, Thailand, Dominican Republic, and Morocco, who are ranked in the bottom half for wealth of nations, rank higher than many wealthy nations, including the United States, for health systems. These countries prove that it is not necessarily the presence of resources, but how the resources are used, that can make a country function effectively.

The indicators alone cannot predict health of a country; neither can the presence of McDonald's. However, they do indicate that health is multidimensional, consisting of many components. The presence of McDonald's may be used as an indicator to predict the health of a country through both direct and indirect determinants. Going back to the logic syllogism shows that:

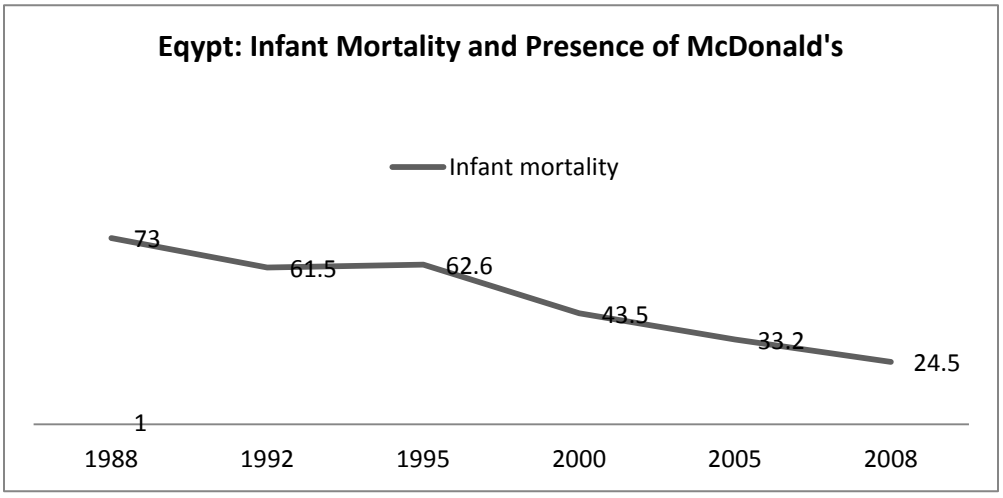
A = presence of McDonald's

B = if the country has a McDonald's, they must have some degree of political stability, economic prosperity, and a functioning healthcare system

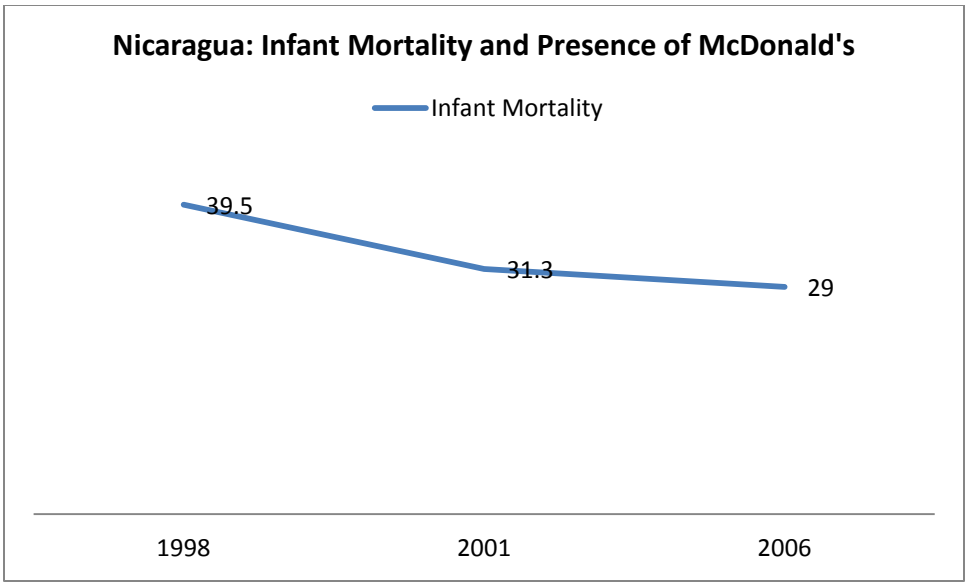
C= good health (low infant mortality, high life expectancy, good nutrition)

If A = B (McDonald's = stability), and B = C (stability= good health), then A = C (McDonald's = good health)

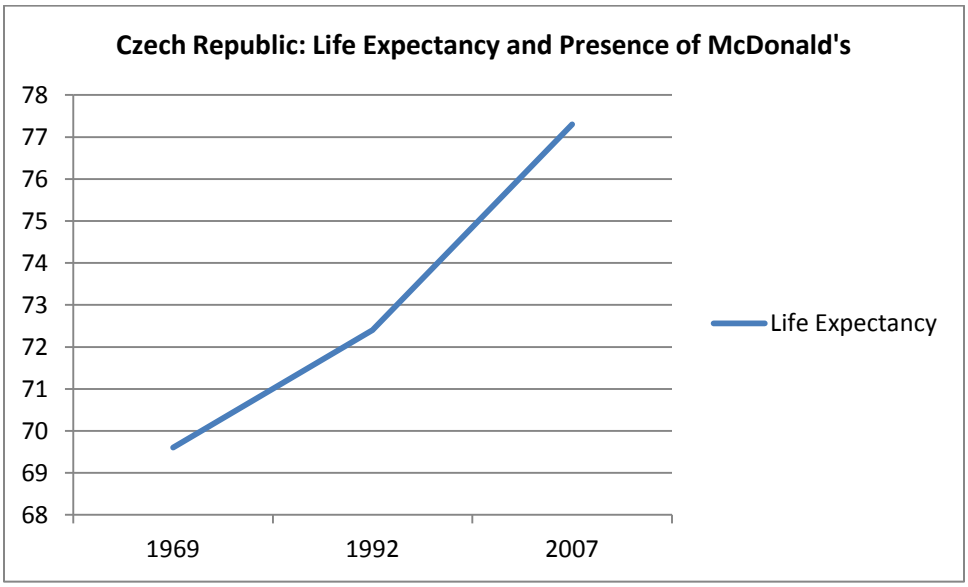
The Golden Arches Theory of Public Health may also be validated in reverse by looking at significant health changes in a country and when they opened their first McDonald's. Infant mortality rates in Egypt steadily declined as shown in roughly five year increments below. What stands out is that the most significant drop of over 20 deaths per 1,000, occurred between 1995 and 2000 (Macro, 2011). Egypt opened their first McDonald's in 1994 (Wikipedia, 2010).



Another country that exemplifies this is Nicaragua, who opened their first McDonald's in 1998 (Wikipedia, 2010). There was a significant decrease in their infant mortality rate after they opened their first franchise (Macro, 2011).



Looking at another indicator, life expectancy, shows the same result. The Czech Republic opened their first McDonald's in 1992 (Wikipedia, 2010).



In a 23 year span between 1969 to 1992, life expectancy increased incrementally by 2.8 years, from 69.6 to 72.4 years. In a 15 year span between 1992 and 2007, after the country had McDonald's, life expectancy increased by 4.9 years, from 72.4 to 77.3. While patterns show life

expectancy normally has a linear increase, that increase is usually gradual. It should also be noted that the Czech Republic and Slovakia split from Czechoslovakia in 1993 to form two independent countries (Wikipedia, 2011). Factors from the reforming of the nation certainly had affects on population health, although it was a peaceful split maintaining political stability, and economic prosperity in the Czech Republic was already high before independence.

These examples are not to say that if a country opens a McDonald's, their population's health will improve. Rather, it shows that McDonald's is an indicator of other factors such as economic and political stability that act as health determinants. Tying this with the contra-positive of the original theory shows that:

If not B, then not A (countries with political instability, economic distress, and ineffective healthcare systems do not have McDonald's)

If not C, then not B (countries with poor health do not have political stability, economic prosperity, and functioning healthcare systems)

If not C, then not A (countries with poor health do not have McDonald's)

VI. Implications

This paper views globalization and health through a Golden Arch shaped lens. The implications do not mean public health practitioners should advocate bringing McDonald's to impoverished countries to improve their health. Rather, this theory validates the necessity that public health programs tie into a larger network including economic, social, and political factors. An ecological way of viewing health is to look at the biological, behavioral, and

environmental risk factors that influence an individual, as well as the social, economic, and cultural factors of that population (Turnock, 2009, p. 79). These determinants also interconnect with access to quality health care, policies, and interventions to affect health status. Global risks also include population growth, pollution, and poverty. With increasing changes from globalization, it is unlikely that disparities in health will be reduced solely through changes in the health sector alone. An indirect approach that focuses on the broader pursuit of improving social justice (or other conditions) may be more successful (Benatar, 2003, p. 122).

Economically, reducing poverty in terms of both increased country wealth and reducing inequalities will improve overall population health (Subramanian, 2002, p. 299). The dimensions of macroeconomic effects of poverty on health must look at how poverty affects the average health of populations, reduce the inequality gap within a country, and reduce the between-country health inequalities (Subramanian, 2002, p. 290). If economic growth only helps those with money, the poor will become even poorer. If economic growth benefits the entire income distribution, relative poverty will remain the same. That is why it is essential to look at both dimensions of economic development, both the overall level of poverty and the distributive aspects of economic well-being, in order to improve population health (Subramanian, 2002, p. 288).

One way to improve the economic gap between rich and poor countries is to enforce and pursue fair trade, not aid. There is no guarantee that foreign assistance actually goes to the intended programs, and it builds dependency without addressing underlying factors of inequality. Limiting “economic colonization” will reduce aid dependency and foster

independent country stability (Ooms, 2008, p. 154). Bringing McDonald's to impoverished areas is an example of expanding trade. It not only offers job opportunities to low-skilled workers and possible health benefits to qualified employees, but also expands economic opportunities through the network of commercialization. It also provides low cost food options; not every item on the McDonald's menu is a nutritionally poor choice.

Existing aid programs often have a limited focus on specific diseases or narrowly perceived problems (Gostin, 2008, p. 59). The Golden Arches Theory of Public Health shows that a range of factors, represented by the presence of McDonald's, influence the individual and community health of a country. Aid programs must address larger, systematic problems to build enduring health systems with functioning infrastructure in stable countries. Countries with McDonald's tend to be politically stable, benefit from economic prosperity, and have functioning healthcare systems. Allocating resources to improve these three areas will indirectly have a positive effect on health. Looking aside from the negative implications of globalization on nutritional impact, countries with McDonald's should have better health.

VII. Future Actions

This paper examines a broad view of globalization and health, as well as several direct and indirect determinants of health. Future research conducted on specific factors brought up in this paper may show different results, such as the state of health in a country pre and post McDonald's, or any correlation between the ratios of McDonald's per person in a population. Examining individual determinants in more detail, such as infant mortality, may also prove beneficial. The Global Nutrition Index is currently the most comprehensive tool widely

available to determine the overall level of nutrition in a country. However, since it combines both food deficits and food excess, it cannot be used as a measure of specific nutrition status, such as hunger or obesity. To view the impact McDonald's has specifically on nutrition status, whether the availability of low cost food decreases hunger or the fast food increases obesity, individual indexes need to be compared. Another area to research further is correlation with public health infrastructure, looking to see if adequate infrastructure is necessary for McDonald's to open in a country, and how in turn presence of a McDonald's influences factors such as safe drinking water and air quality.

For global public health practitioners, the need to connect with other networks is imperative. Tying in with NGOs that are established in the focus area through the local government and who have gained the cultural competency of the population can help with resource allocation and build sustainable programs. Learning the successful franchise formula employed by McDonald's may prove useful in public health program development, while coordinating their assets as developers to support the local infrastructure or stimulate the economy could help eliminate disparities within the population. Utilizing a broad network of support will help public health practitioners reach the broad network of determinants that influence health.

Appendix A: Resources

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Appendix B: Consolidated Country Data

Country	McDonald's	Infant Mortality	Life Expectancy	GDP	Social Unrest	GNI	Health Systems
Afghanistan	N	2	221	216	11	154	173
Albania	N	122	60	127	75	88	55
Algeria	N	80	98	126	61	47	81
American Samoa	Y	151	105	123	no data	no	no data
Andorra	Y	204	4	11	no data	49	4
Angola	N	1	222	117	16	186	181
Anguilla	N	210	19	95	no data	no data	no data
Antigua and Barbuda	N	121	85	68	no data	58	86
Argentina	Y	145	68	76	33	62	75
Armenia	N	101	119	139	94	121	104
Aruba	Y	128	83	59	no data	no data	no data
Australia	Y	190	9	17	154	32	**32**
Austria	Y	195	32	20	155	23	9
Azerbaijan	Y	46	157	103	113	102	109
Bahamas	Y	127	140	49	no data	60	94
Bahrain	Y	146	52	19	99	108	42
Bangladesh	N	47	148	195	19	125	88
Barbados	N	136	101	60	no data	112	46
Belarus	Y	173	139	87	124	92	72
Belgium	Y	193	37	25	146	6	21
Belize	N	91	154	120	76	54	69
Benin	N	30	187	198	89	122	97
Bermuda	N	220	20	4	no data	no data	no data
Bhutan	N	55	158	145	109	147	124
Bolivia	N	60	156	150	14	164	126
Bosnia and Herzegovina	Y	155	45	134	27	70	90
Botswana	N	142	192	88	127	143	169
Brazil	Y	93	124	104	105	48	125
British Virgin Islands	N	126	59	24	no data	no data	no data
Brunei	Y	140	75	9	no data	84	40
Bulgaria	Y	106	114	89	87	65	102
Burkina Faso	N	10	202	203	47	129	132
Burma	N	49	168	209	no data	no data	190
Burundi	N	29	190	228	48	182	143
Cambodia	N	37	178	187	4	157	174
Cameroon	N	32	201	182	49	141	164
Canada	Y	183	12	22	164	35	30
Cape Verde	N	77	143	159	100	136	113

Cayman Islands	N	168	21	14	no data	no data	no data
Central African Republic	N	6	214	223	12	149	189
Chad	N	8	219	194	2	158	178
Chile	Y	163	56	72	117	61	33
China	Y	112	95	125	125	17	144
Colombia	Y	109	97	112	39	72	22
Comoros	N	27	172	213	no data	178	118
Congo, Democractic Republic	N	13	199	227	3	187	188
Congo, Republic of	N	17	200	157	73	no data	166
Cook Islands	N	114	93	116	no data	179	107
Costa Rica	Y	153	55	98	158	37	36
Cote d'Ivoire	N	23	195	191	7	79	no data
Croatia	Y	174	80	67	79	27	43
Cuba	Y	184	57	109	141	39	39
Cyprus	Y	154	53	62	42	41	24
Czech Republic	Y	205	63	54	153	26	48
Denmark	Y	196	48	28	164	3	34
Djibouti	N	40	183	170	no data	105	157
Dominica	N	129	77	108	no data	133	35
Dominican Republic	Y	89	61	119	17	148	51
Ecuador	Y	99	82	124	15	63	111
Egypt	Y	81	123	136	106	137	63
El Salvador	Y	97	117	129	114	77	115
Equatorial Guinea	N	15	181	26	80	155	no data
Eritrea	N	63	179	221	56	181	158
Estonia	Y	166	118	64	57	10	77
Ethiopia	N	16	196	214	no data	176	180
European Union	N	179	44	41	no data	no data	no data
Faroe Islands	N	175	33	42	no data	no data	no data
Fiji	Y	144	138	155	no data	168	96
Finland	Y	211	39	35	161	18	31
France	Y	214	13	39	110	2	1
French Polynesia	Y	164	65	66	no data	no data	no data
Gabon	N	48	207	78	116	74	139
Gambia	N	19	175	189	58	144	146
Georgia	Y	118	64	151	74	46	114
Germany	Y	208	27	32	150	24	25
Ghana	N	50	186	200	90	59	135
Gibraltar	Y	167	47	15	no data	no data	no data
Greece	Y	182	30	45	71	33	14
Greenland	N	148	141	30	no data	no data	no data

Grenada	N	141	121	107	no data	56	85
Guatemala	Y	78	142	142	62	153	78
Guernsey	N	207	6	13	no data	no data	no data
Guinea	Y	31	191	215	20	135	161
Guinea-Bissau	N	7	217	210	no data	173	176
Guyana	N	68	159	132	60	97	128
Haiti	N	41	182	207	8	190	138
Honduras	Y	96	144	156	52	134	131
Hong Kong	Y	217	8	12	147	no data	no data
Hungary	Y	180	92	63	83	21	66
Iceland	N	215	18	29	132	28	15
India	Y	51	161	163	135	95	112
Indonesia	Y	72	137	154	53	38	92
Iran	N	59	146	100	no data	87	93
Iraq	Y	61	145	160	6	175	103
Ireland	Y	203	26	27	111	4	19
Isle of Man	Y	194	22	37	no data	no data	no data
Israel	Y	200	17	48	101	31	28
Italy	Y	213	10	43	121	11	2
Jamaica	N	123	116	121	88	117	53
Japan	Y	218	5	38	151	1	10
Jersey	N	202	11	7	no data	no data	no data
Jordan	Y	107	29	141	107	123	83
Kazakhstan	N	83	152	90	126	34	64
Kenya	N	43	189	199	21	110	140
Kiribati	N	64	171	137	no data	169	142
Kuwait	Y	160	66	8	102	142	45
Kyrgyzstan	N	71	147	185	34	51	151
Laos	N	35	180	179	119	166	165
Latvia	Y	159	122	82	59	22	105
Lebanon	Y	113	90	83	40	67	91
Lesotho	N	39	212	196	44	159	183
Liberia	N	18	194	225	28	189	186
Libya	N	98	58	84	137	no data	87
Liechtenstein	Y	199	24	2	no data	no data	no data
Lithuania	Y	172	86	70	84	40	73
Luxembourg	Y	192	36	3	156	15	16
Macau	Y	216	2	40	no data	no data	no data
Macedonia	Y	157	88	114	63	43	89
Madagascar	N	45	174	212	35	161	159
Malawi	N	11	211	218	96	165	185

Malaysia	Y	119	112	77	64	25	49
Maldives	N	75	100	152	no data	120	147
Mali	N	4	206	206	46	185	163
Malta	Y	206	34	52	130	69	5
Marshall Islands	N	85	132	174	no data	94	141
Mauritania	N	34	184	186	51	138	162
Mauritius	Y	139	99	86	159	53	84
Mexico	Y	104	72	85	81	90	61
Micronesia	N	82	134	183	no data	183	123
Moldova	Y	131	136	176	22	73	101
Monaco	Y	222	1	46	no data	44	13
Mongolia	N	67	153	164	86	139	145
Montserrat	N	117	120	162	no data	no data	no data
Morocco	Y	74	78	146	98	89	29
Mozambique	N	12	210	211	97	170	184
Namibia	N	53	209	131	93	114	168
Nauru	N	156	167	144	no data	184	98
Nepal	N	54	164	204	25	113	150
Netherlands	Y	191	35	18	148	8	17
New Caledonia	Y	178	70	75	no data	no data	no data
New Zealand	Y	185	23	51	157	55	41
Nicaragua	Y	88	130	167	91	160	71
Niger	N	3	203	222	26	151	170
Nigeria	N	9	220	180	45	80	187
Niue	N	no data	no data	138	no data	171	121
North Korea	N	76	149	192	13	no data	167
Northern Mariana Islands	Y	177	67	93	no data	no data	no data
Norway	Y	209	25	5	165	5	11
Oman	Y	116	104	53	149	57	8
Pakistan	Y	25	166	181	9	106	122
Palau	N	132	131	122	no data	163	82
Panama	Y	138	54	91	37	103	95
Papua New Guinea	N	56	163	178	50	119	148
Paraguay	Y	86	74	147	67	116	57
Peru	Y	90	127	115	41	130	129
Philippines	Y	100	133	161	54	71	60
Poland	Y	170	76	65	136	20	50
Portugal	Y	188	49	56	123	16	12
Puerto Rico	Y	161	43	69	no data	no data	no data
Qatar	Y	133	84	1	143	91	44
Romania	Y	143	109	96	68	13	99

Russia	Y	147	162	71	66	86	130
Rwanda	N	24	193	208	122	150	172
Saint Helena	N	110	46	173	no data	no data	
Saint Kitts and Nevis	N	152	96	80	no data	78	100
Saint Lucia	N	130	69	101	no data	96	68
Saint Pierre and Miquelon	N	162	31	130	no data	no data	no data
Saint Vincent and Grenadines	N	124	107	106	no data	68	74
Samoa	Y	87	128	143	no data	156	119
San Marino	Y	186	3	31	no data	42	3
Sao Tome and Principe	N	42	176	193	138	177	133
Saudi Arabia	Y	111	108	55	85	99	26
Senegal	N	36	188	190	23	107	59
Serbia	Y	171	102	102	69	50	no data
Seychelles	N	137	115	61	144	127	56
Sierra Leone	N	14	197	219	32	191	no data
Singapore	Y	221	7	6	131	9	6
Slovakia	Y	169	79	57	103	52	62
Slovenia	Y	197	62	50	152	36	38
Solomon Islands	N	102	106	169	no data	132	80
Somalia	N	5	213	224	no data	146	179
South Africa	Y	57	216	105	42	145	175
South Korea	Y	198	41	44	120	140	58
Spain	Y	212	14	47	104	14	7
Sri Lanka	Y	149	81	148	31	64	76
Sudan	N	20	198	184	5	124	134
Suriname	Y	103	103	111	no data	45	110
Swaziland	N	26	218	153	128	152	177
Sweden	Y	219	16	23	162	7	23
Switzerland	Y	201	15	16	160	19	20
Syria	N	115	94	149	95	82	108
Taiwan	Y	181	51	33	139	no data	no data
Tajikistan	N	65	165	188	38	172	154
Tanzania	N	21	205	201	92	174	156
Thailand	Y	108	113	118	43	85	47
Timor-Leste	N	66	155	171	30	83	no data
Togo	N	44	177	220	108	104	152
Tonga	N	125	87	135	no data	188	116
Trinidad and Tobago	N	73	135	58	129	131	67
Tunisia	N	79	91	113	134	75	52
Turkey	Y	84	126	94	55	93	70
Turkmenistan	N	58	151	128	78	66	153

Turks and Caicos	N	134	40	97	no data	no data	no data
Tuvalu	N	69	169	197	no data	118	136
Uganda	N	28	204	205	65	109	149
Ukraine	Y	158	150	133	18	81	79
United Arab Emirates	Y	135	71	21	145	101	27
United Kingdom	Y	189	28	36	133	30	18
United States	Y	176	50	10	112	98	37
Uruguay	Y	150	73	81	115	29	65
Uzbekistan	N	92	125	165	72	126	117
Vanuatu	N	52	170	140	no data	no data	127
Venezuela	Y	95	110	92	29	100	54
Vietnam	N	94	129	166	140	76	160
Virgin Islands	Y	165	38	79	no data	no data	no data
Wallis and Futuna	N	187	42	158	no data	no data	no data
West Bank	N	120	89	168	no data	no data	no data
Western Sahara	N	33	185	175	no data	no data	no data
World	N	62	160	99	no data	no data	no data
Yemen	Y	38	173	172	82	162	120
Zambia	N	22	208	202	10	167	182
Zimbabwe	N	70	215	226	1	180	155